Air Quality Permit

Issued to: American Chemet Corporation
P.O. Box 1160
East Helena, MT 59635

Permit: #1993-14
Administrative Amendment (AA)
Request Received: 09/26/03
Department Decision on AA: 11/14/03
Permit Final: 12/02/03
AFS #: 049-0003

An air quality permit, with conditions, is hereby granted to the American Chemet Corporation (American Chemet), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Plant Description/Location

This permit covers all existing sources of emissions at the American Chemet facility. The primary purpose of the facility is the production of copper oxides and zinc oxides for use in several different industries, including the production of marine paints and animal feeds. The facility consists of numerous gas-fired and electric furnaces, mills, and blenders for the production of the oxides. The American Chemet facility is located within the city limits of East Helena, approximately 3 miles east of Helena. The legal description is the NW ¼ of Section 36, Township 10 North, Range 3 West, Lewis and Clark County, Montana. A list of permitted equipment is contained in the permit analysis.

B. Current Permit Action

The current permit action is a modification of Permit #1993-13. On September 26, 2003, American Chemet requested an extension to permit condition Section II.A.6. The condition was originally added to the Montana air quality permit to assist with any potential emission problems, which could have affected the East Helena Lead SIP. American Chemet has no current plans to construct the 20-meter stack. However, the facility would like to keep the option available for future use.

On September 8, 2003, the Department of Environmental Quality (Department) received a request from American Chemet to upgrade the pilot plant, permitted in Montana Air Quality Permit #1993-12 to a full scale operation. The pilot plant was installed as a test unit of a new technology for producing copper oxide. The proposed unit, referred to as the #56 Copper Furnace, will use the baghouse which controls the #24 Copper Mill (Stack 18) for product recovery in the same manner as the pilot plant. The #56 Copper furnace feed system will be controlled by the baghouse at the #15 Copper Sizer (Stack 13). Based on the information submitted by American Chemet, the Department determined the upgrade falls within the de minimis rule, ARM 17.8.745, because the potential emissions are well below 15 tons per year, and because the modification will not violate any conditions of the existing permit.

In addition, on September 13, 2002, the Department received American Chemet's proposed facility modifications for the purpose of enabling an increase in production and improving material handling efficiency. The project will affect the facility's sizing, mixing and packaging processes. The new equipment will include, a copper furnace and associated baghouse, a new conveying system and associated feed bins, 3 copper mixers and associated bins, bin vents and boiler, and a packer with associated baghouse, bins, and bin vents. The Department determined

that the modifications meet the criteria set forth in ARM 17.8.745 because the proposed increase in emissions for the facility will be less than 15 tons per year.

American Chemet also proposed to remove the #11 copper mill vent baghouse and the #11 copper mill feed baghouse. Some of the equipment currently controlled by those baghouses will also be removed or shut down. The remaining equipment will be controlled by the #11 Copper Mill Support Baghouse. The #21 copper furnace will also be removed from the permit. American Chemet also requested that the outlet grain loading limitation for several emitting units be reduced. The grain loading limitation will be lowered for the emissions from the following equipment: Stack #14 (controlling emissions from the #24 Copper Mill, the #28 Copper Furnace) and Stack #25 (controlling emissions from the #33 Copper Blender, the #34 Copper Mill, the #35 Copper Sieve, the #36 Copper Blender, and the #37 Copper Packer).

Furthermore, American Chemet requested the following equipment and associated baghouses be restricted to an operating limit of 7,000 hours per rolling 12-month period: #33 Copper Blender, the #34 Copper Mill, the #35 Copper Sieve, the #36 Copper Blender, the #37 Copper packer, the #44 Copper Mill, the #16, #17, and #18 Copper Furnaces, the #38 Copper Mill, and the #42 Copper Sizer.

American Chemet plans to upgrade the pollution control equipment for the #2 Copper Furnace and the #19 Copper Furnace by installing a new baghouse dust collector that will serve both units. Currently, the #2 Copper Furnace emissions are controlled by a wet scrubber. Emissions from the #19 Copper Furnace are currently controlled by a thermal oxidation unit.

Section II: Limitations and Conditions

A. Emission and Operational Limitations

1. The average lead content of American Chemet's feed material shall be less than 0.15% on a quarterly average and 0.10% on an annual average.

2. While the #2 copper furnace is controlled by a wet scrubber, emissions from the scrubber (stack #3) shall not exceed:

   a. 20% opacity (ARM 17.8.304); or

   b. 0.05 gr/dscf of particulate (ARM 17.8.752).

3. Emissions from the #23 copper furnace (stack #17) shall not exceed:

   a. 0.06 lb/hr of particulate (ARM 17.8.752);

   b. 0.6 lb/hr of sulfur dioxide (SO_2) (ARM 17.8.752);

   c. 0.006 lb/hr of lead (ARM 17.8.752); or

   d. 20% opacity (ARM 17.8.752).

4. The #41 copper furnace emissions shall be controlled by a baghouse (ARM 17.8.749).

5. Emissions from the individual baghouses (stacks #2 and #31) that control the #1 copper furnace and the #41 copper furnace, shall each not exceed:

a. 0.015 gr/dscf of particulate matter (ARM 17.8.752);

b. 0.007 lb/hour of lead (American Chemet Board Order dated 8/4/95 and 6/30/95 stipulation (ARM 17.8.749));

c. 15.4 lb of lead/calendar quarter (American Chemet Board Order dated 8/4/95 and 6/30/95 stipulation (ARM 17.8.749)); and

d. 20% opacity (ARM 17.8.752).

6. If a combined stack, with a height of 20 meters, is constructed to vent the #1 copper furnace baghouse and the #41 copper furnace baghouse, then commencement of stack construction must occur by August 31, 2004. Emissions from the stack shall not exceed:

a. 0.015 gr/dscf of particulate matter (ARM 17.8.752);

b. 0.08 lb/hour of lead (American Chemet Board Order dated 8/4/95 and 6/30/95 stipulation (ARM 17.8.749));

c. 175 lb of lead/calendar quarter (American Chemet Board Order dated 8/4/95 and 6/30/95 stipulation (ARM 127.8.749)); and

d. 20% opacity (ARM 17.8.752).

7. Emissions from the #11 Copper Mill Support Baghouse (stack #11) that controls the #11 Copper Mill, the #50 copper sizer feed bin, and the batch bin shall not exceed:

a. 0.02 gr/dscf of particulate (ARM 17.8.752); and

b. 20% opacity (ARM 17.8.304).

8. Emissions from the #5 Copper Mill shall be controlled by the #5 Cu Mill Vent Baghouse (stack #4), the #5 Cu Mill Transfer Baghouse (stack #5), and the #5 Cu Mill Feed Baghouse (stack #6) (ARM 17.8.749). Emissions from each of these baghouse stacks shall not exceed:

a. 0.02 gr/dscf of particulate (ARM 17.8.752); and

b. 20% opacity (ARM 17.8.304).

9. Emissions from the baghouse (stack #21) that controls the gas-fired #28 copper furnace (#CL-056) system, shall not exceed:

a. 0.01 gr/dscf of particulate (ARM 17.8.752); and

b. 20% opacity (ARM 17.8.752).

10. Emissions from the baghouse (stack #28) that controls the #40 copper sizer shall not exceed:

a. 0.02 gr/dscf of particulate matter (ARM 17.8.752); and

b. 7% opacity (ARM 17.8.752).

11. Emissions from the baghouse (stack #25) that controls the #33 copper blender, the #34 copper mill, the #35 copper sieve, the #36 copper blender, the #37 copper packer, and the #44 copper mill shall not exceed:

    a. 0.01 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 7% opacity (ARM 17.8.752).

12. The #33 copper blender, the #34 copper mill, the #35 copper sieve, the #36 copper blender, the #37 copper packer, and their associated baghouse (stack #25) shall not exceed 7,000 hours of operation per rolling 12-month period (ARM 17.8.749).

13. Emissions from the #16 copper furnace, #17 copper furnace, #18 copper furnace and the #38 copper mill shall be controlled by a baghouse (stack #14). Emissions from stack #14 shall not exceed:

    a. 0.01 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 10% opacity (ARM 17.8.752).

14. The #16 copper furnace, #17 copper furnace, #18 copper furnace and the #38 copper mill and their associated baghouse (stack #14) shall not exceed 7,000 hours of operation per rolling 12-month period (ARM 17.8.749).

15. Emissions from the individual baghouses (stacks #27 and #14) that control the #3 copper furnace, the #4 copper furnace, the #38 copper mill, the #18 copper furnace, the #17 copper furnace, and the #16 copper furnace, shall each not exceed:

    a. 0.02 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 10% opacity (ARM 17.8.752).

16. American Chemet shall meet the following requirements for the #39 Gas Processor:

    a. Burn only natural gas in the processor (ARM 17.8.749); and

    b. Visible emissions shall not exceed 10% opacity (ARM 17.8.752).

17. While the #19 copper furnace is controlled by a thermal oxidation unit, emissions from the #19 copper furnace shall not exceed:

    a. 0.10 gr/dscf adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used (ARM 17.8.316); and

    b. 10% opacity (ARM 17.8.316).

18. After the #2 copper furnace and the #19 copper furnace are combined to vent to stack #3, emissions from the #2 copper furnace and the #19 copper furnace shall be controlled by a baghouse. American Chemet must commence the project by November 30, 2006, (ARM 17.8.762). Emissions from the stack shall not exceed:

a. 0.02 gr/dscf of particulate (ARM 17.8.752); and

b. 10% opacity (ARM 17.8.316).

19. The #42 copper sizer emissions must be controlled by a baghouse. The baghouse shall not exceed 7,000 hours of operation per rolling 12-month period (ARM 17.8.752).

20. The #43 copper blender emissions must be controlled by a baghouse (ARM 17.8.752).

21. Emissions from the individual baghouses (stacks #29 and #30) that control the emissions from the #42 copper sizer, the #42 copper sizer dump hopper, and the #43 copper blender shall each not exceed:

    a. 0.01 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 7% opacity (ARM 17.8.752).

22. The #30 copper mill, the #32 crusher, the #46 copper mill, the #47 screen, and the #48 copper mill, shall be controlled by a baghouse (ARM 17.8.749).

23. Emissions from the baghouse (stack #32) that controls the #30 copper mill, the #32 crusher, the #46 copper mill, the #47 screen, and the #48 copper mill shall not exceed:

    a. 0.015 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 7% opacity (ARM 17.8.752).

24. The #31 sieve, the #24 copper mill, and the #56 Copper Furnace shall be controlled by a baghouse (ARM 17.8.749).

25. Emissions from the baghouse (stack #18) that controls the #31 sieve, the #24 copper mill, and the #56 Copper Furnace shall not exceed:

    a. 0.01 gr/dscf of particulate matter (ARM 17.8.752); and

    b. 7% opacity (ARM 17.8.752).

26. The #56 Copper Furnace and the #24 Copper Mill shall not operate at the same time.

27. Each copper furnace that receives process gas from the #49 Gas Processor must comply with the following requirements:

    a. Emissions from the feed end of each copper furnace shall be controlled with a flame curtain during all periods when the copper furnace is receiving process gas from the #49 Gas Processor (ARM 17.8.752).

    b. Emissions from the discharge end of each copper furnace shall be controlled with a double lip curtain seal, or equivalent, during all periods when the copper furnace is receiving process gas from the #49 Gas Processor (ARM 17.8.752).

    c. Excess process gas from each copper furnace shall be collected and routed to a continuously operated, natural gas-fired afterburner (ARM 17.8.752).

d. Emissions from each afterburner stack that controls emissions from each process gas – supplied copper furnace, shall not exceed 1.99 pounds per hour of carbon monoxide (CO) (ARM 17.8.749).

e. Emissions from the flame curtain discharge stack and the afterburner stacks shall not exceed 10% opacity (ARM 17.8.749).

f. The #49 Gas Processor and each copper furnace that receives process gas from the #49 Gas Processor shall not be operated unless the afterburner and flame curtain on each copper furnace are fully operational and providing the maximum emission reduction for which it was designed. Each copper furnace that receives process gas from the #49 Gas Processor shall be equipped and operated with feed end controls that monitor the operational status (i.e., presence of a flame) of the afterburner and flame curtain (ARM 17.8.749).

28. The #51 copper furnace and the #55 packer emissions shall be controlled by a baghouse (ARM 17.8.749).

29. Emissions from the individual baghouses that control the #51 copper furnace and the #55 Packer shall not exceed:

    a. 0.02 gr/dscf of particulate matter (ARM 17.8.752);

    b. 20% opacity (ARM 17.8.752).

30. The #5 Copper Mill Batch Bin and the #50 Copper Sizer Feed Bin #1 shall not operate simultaneously (ARM 17.8.749).

31. The Batch Bin and the #52 Copper Mixer Feed Bin #1 shall not operate simultaneously (ARM 17.8.749).

32. The #53 Copper Mixer and the #54 Copper Mixer shall not operate (be charged) simultaneously (ARM 17.8.749).

33. The #5 Copper Mill Feed bins #2, #3, and #4 shall not operate simultaneously (ARM 17.8.749).

34. The #53 Copper Mixer Conveyor and the #54 Copper Mixer Conveyor shall not operate (be charged) simultaneously (ARM 17.8.749).

35. Except as otherwise specified in this permit, American Chemet shall not operate any process equipment that was installed after August 21, 2002, unless a) conveyer covers or enclosures are being used and maintained on that process equipment, and/or b) transfer point covers or enclosures are being used and maintained on that process equipment, and/or c) structural enclosures surround that process equipment (ARM 17.8.749).

B. Testing Requirements

1. American Chemet shall perform compliance tests for particulate, lead, and opacity on the baghouse (stack #2) controlling the #1 copper furnace; testing must demonstrate compliance with the limitations in Section II.A.5 or 6, whichever is applicable. The opacity test shall consist of a minimum of 30 minutes of readings. Compliance testing shall be performed on a once every-5-year basis, or according to another testing/monitoring schedule as may be

approved by the Department. The most recent testing was conducted in April 1999 (ARM 17.8.105).

2. American Chemet shall perform compliance testing (stack #31) on the baghouse controlling the #41 copper furnace for particulate, lead, and opacity. The testing must demonstrate that the #41 copper furnace is in compliance with the limitations in Section II.A.5. The tests shall be performed on a once every-5-year basis, or according to another testing/monitoring schedule as may be approved by the Department. The opacity test shall consist of a minimum of 30 minutes of readings. The most recent testing was conducted in July 2003 (ARM 17.8.105).

3. If the exhaust from the #41 copper furnace baghouse is routed to a raised #1 copper furnace stack (stack #2), with a new height of 20 meters, American Chemet shall perform an initial compliance test for particulate, lead, and opacity. The testing must demonstrate compliance with the limitations in Section II.A.6 a, b, and d within 180 days of completion of construction of the new stack. The tests shall continue on a once every-5-year basis, or according to another testing/monitoring schedule as may be approved by the Department. The opacity test shall consist of a minimum of 30 minutes of readings (ARM 17.8.105).

4. American Chemet shall perform compliance testing for CO on the afterburner controlling emissions from the first copper furnace to receive process gas from the #49 Gas Processor. The testing must demonstrate compliance with the CO limitations in Section II.A.27.d. The testing shall be conducted within 180 days of commencement of operation of the #49 Gas Processor. The tests shall continue on a once every-2-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105).

5. Upon connection of the second and third copper furnaces to the #49 Gas Processor, American Chemet shall perform compliance testing for CO on each afterburner controlling emissions from each copper furnace. The testing must demonstrate compliance with the CO limitations in Section II.A.27.d. The testing shall be conducted within 180 days of connection to the #49 Gas Processor. The tests shall continue on a once every-2-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105).

6. Upon completion of routing the #2 copper furnace and the #19 copper furnace to a baghouse (stack #3), American Chemet shall perform an initial compliance test for particulate and opacity. The testing must demonstrate compliance with limitations in Section II.A.18.a and b. The testing shall be conducted within 180 days of completion of the project. The tests shall continue on a once every-5-year basis, or according to another testing/monitoring schedule as may be approved by the Department. The opacity test shall consist of a minimum of 30 minutes of readings (ARM 17.8.105).

7. Upon completion of the #51 copper furnace, American Chemet shall perform an initial compliance test for particulate and opacity. The testing must demonstrate compliance with limitations in Section II.A.29. The testing shall be conducted within 180 days of completion of the project. The tests shall continue on a once every-5-year basis, or according to another testing/monitoring schedule as may be approved by the Department. The opacity test shall consist of a minimum of 30 minutes of reading (ARM 17.8.105).

8. Upon completion of the #55 packer, American Chemet shall perform an initial compliance test for particulate and opacity. The testing must demonstrate compliance with limitations in Section II.A.29. The testing shall be conducted within 180 days of completion of the project. The tests shall continue on a once every-5-year basis, or according to another

testing/monitoring schedule as may be approved by the Department. The opacity test shall consist of a minimum of 30 minutes of reading (ARM 17.8.105).

9. The Department may require further testing (ARM 17.8.105).

10. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

C. Operational and Emission Inventory Reporting Requirements

1. American Chemet shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis and sources identified in Section I of the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. The information shall include the following and shall be in the units required by the Department. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

   a. Tons of material processed by the following:

Source Description	Stack #
#1 Zinc-gas	1
#1 Copper Furnace-gas	2
#2 Copper Furnace-gas	3
#3 Copper Furnace	27
#4 Copper Furnace	27
#5 Cu Mill Vent Baghouse	4
#5 Cu Mill Transfer Baghouse	5
#5 Cu Mill Support Baghouse	6
#8 Copper Blender	7
#9 Packer	8
#11 Cu Mill Support Baghouse	11
#15 Copper Sizer	13
#16 Copper Furnace	14
#16 Copper Furnace CO	14A
#17 Copper Furnace	14
#17 Copper Furnace CO	14B
#18 Copper Furnace	14
#18 Copper Furnace – Gas	14C
#19 Copper Furnace	3
#23 Copper Furnace	17
#24 Copper Mill	18
#26 Copper Packer	20
#27 Packer	20
#28 Copper Furnace	21
#30 Copper Mill	32
#31 Sieve	18
#32 Crusher	32
#33 Copper Blender	25

#34 Copper Mill	25
#35 Copper Sieve	25
#36 Copper Blender	25
#37 Copper Packer	25
#38 Copper Mill	14
#40 Copper Sizer	28
#41 Copper Furnace	31
#42 Copper Sizer	29
#43 Copper Blender	30
#44 Copper Mill	25
#46 Copper Mill	32
#47 Screen	32
#48 Copper Mill	32
#49 Gas Processor	33
#50 Copper Sizer	11
#51 Copper Furnace	34
#56 Copper Furnace	18
Packaging Baghouse	35

b. Hours of operation of each source of emissions at the facility.

c. Amount of gas burned for each piece of fuel-burning equipment.

d. Average annual lead content of the feed materials to the facility.

e. Emission rate determined through testing for the year for each piece of equipment tested. The tests reported shall be those for the same calendar year as the annual production rates and shall include the following:

i. Grams/hour;
ii. Date of test; and
iii. Average grams/hour for each source tested.

f. Amount of process gas generated by the #49 Gas Processor.

2. The following information shall be submitted to the Department on a quarterly basis. Data for each calendar quarter shall be submitted within 45 days of the end of the quarter.

a. Hours of operation of the #1 copper furnace and the #41 copper furnace.

b. Pounds per quarter of lead emissions from the #1 copper furnace stack (stack #2) and the #41 copper furnace stack (stack #31), or the total emissions from the 20-meter stack if it is constructed.

c. The quarterly average lead content of the feed material to the facility.

3. American Chemet shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change and must include the information requested in ARM 17.8.745 (ARM 17.8.745).

4. All records compiled in accordance with this permit must be maintained by American Chemet as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Notification

American Chemet shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749).

1. Construction of the 20-meter stack, 30 days prior to commencement of construction. Actual start-up date of the 20-meter stack, within 15 days after start up.

2. Actual start-up date of the #49 gas processor/third copper furnace unit (i.e., #17, #18 or #28) within 30 days after the actual start-up date.

3. All compliance source tests as required by the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

4. Actual start-up date of the #56 Copper Furnace within 30 days after the actual start-up date.

5. Actual start-up date of the #51 Copper Furnace and associated baghouse within 30 days after the actual start-up date.

6. Actual start-up date of the #52 Copper Mixer and associated bins, bin vents and boiler within 30 days after the actual start-up date.

7. Actual start-up date of the #55 Packer and associated baghouse within 30 days of the actual start-up date.

8. Actual start-up date of the #52 Copper Mixer within 30 days of the actual start-up date.

9. Actual start-up date of the #53 Copper Mixer within 30 days of the actual start-up date.

10. Combination of #19 copper furnace with #2 copper furnace routed to a baghouse within 30 days of actual start up date.

Section III: General Conditions

A. Inspection - American Chemet shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if American Chemet fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving American Chemet of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by American Chemet may be grounds for revocation of this permit, as required by that section and rules adopted there under by the Board.

PERMIT ANALYSIS
American Chemet Corporation
Permit #1993-14

I. Introduction/Process Description

A. Site Location and Process Description

The American Chemet Corporation (American Chemet) facility is located within the City of East Helena, approximately 3 miles east of Helena. The legal description of the facility is the NW ¼ of Section 36, Township 10 North, Range 3 West, Lewis and Clark County, Montana. The facility uses elemental copper and zinc compounds as raw materials to produce paint additives and agricultural products.

B. Permitted Equipment

This permit covers the following equipment at the facility:

1. #1 Copper Furnace and associated baghouse (BH) (stack #2)
2. #2 Copper Furnace Scrubber and associated duct work and settling tanks
3. #2 Copper Furnace (stack #3)
4. #3 and #4 Copper Furnaces and associated BH (stack #27)
5. #5 Copper Mill and its associated product recovery cyclone and three BHs: the #5 Cu Mill Vent BH (stack #4), the #5 Cu Mill Transfer BH (stack #5), and the #5 Cu Mill Feed BH (stack #6)
6. #11 Copper Mill and its associated BH: #11 Cu Mill Support BH (stack #11)
7. #8 Copper Blender and associated BH (stack #7)
8. #9 Packer and appurtenances - including two BHs (stack #8)
9. #19 Copper Furnace – gas fired (stack #3)
10. #23 Copper Furnace (stack #17)
11. #28 Copper Furnace - gas fired and associated feed bins and totes (stack #21)
12. #30 Copper Mill and associated BH (stack #32)
13. #34 Copper Mill and associated pulse-jet BH (stack #25)
14. #35 Copper Sieve and associated pulse-jet BH (stack #25)
15. #36 Copper Blender and associated pulse-jet BH (stack #25)
16. #37 Copper Packer and associated pulse-jet BH (stack #25)
17. #38 Copper Mill and associated pulse-jet BH (stack #14)
18. #40 Copper Sizer and associated cyclone and BH (stack #28)
19. #41 Copper Furnace and associated BH (stack #31)
20. #42 Copper Sizer and associated BH (stack #29)
21. #43 Copper Blender (stack #30)
22. #32 Crusher and associated BH (stack #32)
23. #44 Copper Mill and associated product recovery BH (stack #34)
24. #46 Copper Mill, the #47 screen, the # 48 Copper mill, and associated BH (stack #32)
25. #16 Copper Furnace (stack #14) and #16 Copper Furnace CO (stack #14A)
26. #17 Copper Furnace (stack #14), and #17 Copper Furnace CO (stack #14B)
27. #18 Copper Furnace (stack #14), and #18 Copper Furnace – Gas (stack #14C)
28. #49 Gas Processor (stack #33) and the Johnson Model 321 thermal oxidation units (i.e., afterburners) associated with the 3 copper furnaces
29. #50 Copper Sizer (Stack #11)
30. #51 Copper Furnace and associated BH (stack #34)
31. #52 Copper Mixer and associated bins, bin vents and boiler
32. #53 Copper Mixer

33. #54 Copper Mixer
34. #55 Packer and #55 Packer BH (stack #35)
35. #56 Copper Furnace (stack #18)

C. Permit History

Permit #685(-020674) was the first permit issued to American Chemet on November 20, 1973, for the construction of a scrubber (referred to as the Ducon scrubber) and associated duct work and settling tank to control emissions from two (#1 and #2) copper furnaces.

Permit #882 was issued on August 12, 1975, for the #19 copper furnace.

Permit #883 was issued on June 9, 1975, for a new copper grinding facility. At the time, the facility was known as the #5 and #6 copper mills - which referred to the two baghouses. This permit covered the installation of the process equipment and the product recovery baghouses.

Permit #934 was issued on April 6, 1976, for the #1 copper furnace.

Permit #1020 was issued on December 21, 1976, for a copper furnace and stack. The furnaces covered by Permit #1020 were a furnace, which has been removed and sold, and the #1 copper furnace that was still operating.

Permit #1290 was issued on October 24, 1978, for the installation of the #9 packer and appurtenances (three baghouses).

Permit #1454 was issued on March 18, 1980, for the #20 copper furnace. The #20 copper furnace was the second furnace of this type at the facility.

Permit #1585 was issued on April 29, 1981, for the installation of cyclones and a courtyard baghouse. A cyclone was installed on each of the #2, #3, and #4 copper furnaces. The courtyard baghouse reference was later changed to the #13 copper mill baghouse.

Permit #1589 was issued on May 7, 1981, for a crusher baghouse. The crusher baghouse became the third baghouse (named the #7 copper mill) installed on the #5 Copper Mill system that was originally covered by Permit #883.

Permit #1993 was issued on February 5, 1985, for the #23 copper furnace.

Permit #1993-01 was issued on February 25, 1994, for the construction and operation of the gas-fired #28 copper furnace. The #28 copper furnace would produce the premium product at American Chemet. Copper powder was the material fired in the furnace. Also, this permit alteration was the mechanism used to combine all previously existing permits issued to American Chemet for the East Helena plant into one permit. Permit #1993-01 replaced Permits #685, #882, #883, #934, #1020, #1290, #1454, #1585, #1589, and #1993. All conditions contained in the permits became conditions in Permit #1993-01.

Permit #1993-02 was issued on April 22, 1994, for the construction and operation of an experimental furnace (#29 copper furnace) and a stirred ball mill system (#30 copper mill). The experimental furnace was constructed and installed to allow American Chemet the opportunity to evaluate the use of other types of feed material. The #29 copper furnace was constructed outdoors, adjacent to the existing #1 copper furnace.

The #30 copper mill was installed to process some of the copper oxides previously processed in the #5 copper mill. The material processed was oversized lumps, which caused problems in the

#5 copper mill. The mill was fed by a vibratory or screw-type feeder. The milled product was discharged into a 48-cubic-foot metal tote. The #30 copper mill was installed in an existing building located on the south side of the plant.

Permit #1993-03 was issued on February 15, 1995, for the construction and operation of new processing equipment and controls. The equipment included the #33 copper blender, #34 copper mill, #35 copper sieve, #36 copper blender, #37 copper packer, and the #38 copper mill. The emissions from this processing equipment were controlled by a Mikro Pulsaire dust collector, except for the #38 copper mill, that was controlled by an existing baghouse. The new equipment also included the #39 gas processor, which burned natural gas. This additional equipment allowed American Chemet to produce a new product.

Other changes included the construction and operation of a new baghouse to control emissions from the #3 and #4 copper furnaces and the addition of a #40 copper sizer. At the time, the #3 and #4 furnaces were controlled by a scrubber system that also controlled emissions from the #2 copper furnace. The change was made to decrease the inlet loading to the scrubber. The #40 copper sizer was new equipment added to increase the flexibility of the facility. The emissions from the sizer were controlled by a cyclone followed by a baghouse.

Permit #1993-04, issued July 17, 1996, authorized two separate projects at the facility. The first project resulted in the installation of an additional copper furnace to increase production. The new #41 copper furnace was identical to the #1 copper furnace, except for some minor changes to the feed and discharge systems. Emissions from the new #41 copper furnace were controlled with a pulse-jet baghouse.

The first project also included the possible construction of a new 20-meter exhaust stack. Emissions from the baghouse controlling the #1 copper furnace, as well as from the new baghouse controlling the #41 copper furnace, would be routed to the existing 8.8-meter stack or a new 20-meter stack. The construction of the #41 copper furnace would result in a minor increase in actual emissions from the facility (approximately 1.1 ton/year of particulate, 0.01 ton/year of SO_2, and 0.0008 ton/year of lead), but no increase in allowable particulate or lead emissions. American Chemet had until July 17, 1999, to construct a new 20-meter stack as allowed by the Board of Environmental Review (Board) order issued August 4, 1995.

The second project authorized the alteration of the existing #19 copper furnace. The furnace consists of two separate sections that exhaust through a single stack. The unit was modified to disable the west section and relocate the stack over the east section. The existing burner and afterburner were redesigned to improve efficiency. Also, the feed and discharge methods were redesigned from batch to continuous processing of the copper laden feed. The capacity of the furnace did not change through this alteration and, therefore, the emissions were not expected to change. These changes did not trigger review under the Montana Clean Air Act 75-2-215.

Permit #1993-05 was issued on July 2, 1997, to allow the construction of a new #42 copper sizer and associated baghouse, and the construction of a new #43 copper blender and associated baghouse.

The #42 copper sizer was a possible replacement for the #14 copper sizer (an old unit with uncertain spare parts availability). The actual shutdown date of the #14 copper sizer was unknown and, therefore, the new unit was permitted to operate concurrently with the old unit. The #43 copper blender was installed to improve the efficiency of various facility processes. The blender had an associated natural gas-fired unit. The particulate emissions from the #43 copper

blender were to be controlled by a new baghouse. The emissions from the dump hopper for the #42 copper sizer were to be controlled by the new baghouse.

The permit alteration slightly changed the language related to the #41 and #1 copper furnaces to clarify that the #41 and #1 copper furnace emissions had to vent through the same stack. Each furnace had a designated baghouse for controlling particulate and lead emissions. The stack could either be the existing 8.8-meter stack or a new 20-meter stack, which, if constructed, would replace the 8.8-meter stack. The requirement for the specific stacks and associated emission limit for lead came from the Board order issued on June 30, 1995. If American Chemet changed the discharge points of the exhaust gases, they had to run a revised dispersion model to demonstrate compliance with the ambient lead standard.

The Department of Environmental Quality (Department) also removed the conditions associated with the #29 copper furnace that had been permitted as an experimental unit on April 22, 1994. On March 12, 1996, American Chemet informed the Department that this unit had been permanently disabled.[1] Since the unit was no longer usable, the conditions associated with its use and emission testing were no longer needed. American Chemet was no longer authorized to use the #29 copper furnace.

Permit 1993-06 was issued on April 17, 1998, to allow American Chemet to separate the emissions from the #1 and #41 copper furnaces. Originally, American Chemet had planned (and been required by Permit #1993-04) to route the emissions from the proposed #41 copper furnace to the #1 copper furnace stack. The company determined this was probably not feasible, based on the system configurations. However, the facility was located in an area designated as non-attainment for the lead national ambient air quality standard. Therefore, the Department performed modeling to demonstrate that separating the two exhausts would not violate the ambient standard for lead if ½ of the emission limit that applied to the #1 copper furnace stack was applied to each of the stacks, separately.

The permitting action described above did not increase emissions from American Chemet; therefore, the Department did not perform an Environmental Assessment (EA) for the project. The relocation of the emissions from the furnace did not adversely impact the ambient air or the State Implementation Plan (SIP) provisions designed to bring the area into compliance with the ambient lead standard.

Permit #1993-07, issued August 14, 1998, allowed American Chemet to initiate four minor changes within their facility, but did not permit an increase in allowable emissions. The first change American Chemet intended to make was to replace the #32 crusher with the #45 crusher, and control the #45 crusher with the baghouse that vented to stack #5. The #32 crusher was controlled by the baghouse venting to stack #19. After construction, the baghouse that vented to stack #5 would control the #6 copper mill and the #45 crusher. However, American Chemet elected to not construct the #45 crusher and to keep the #32 crusher in service.

The second change removed the #25 copper shredder. The #25 copper shredder had been controlled by the baghouse that vented to stack #19. Prior to Permit #1993-07, the baghouse that vented to stack #19 controlled the #32 crusher, the #25 shredder, and the #30 copper mill.
The third change moved the #31 sieve and controlled its emissions with the baghouse that vented to stack #19. Prior to Permit #1993-07, the #31 sieve was controlled by the baghouse that vented

[1] In the letter, American Chemet referenced the furnace as #32 Copper Furnace. This was an incorrect number reference. The name for the furnace is #29 Copper Furnace.

to stack #18. After Permit #1993-07, the baghouse that vented to stack #19 controlled the #30 copper mill and the #31 sieve.

The fourth change relocated the #44 copper mill and controlled its emissions by the baghouse that vented to stack #25. Permit #1993-07 allowed the baghouse that vented to stack #25 to control the #36 copper blender, the #35 copper sieve, the #34 copper mill, the #33 copper blender, the #37 copper packer, and the #44 copper mill.

Permit #1993-08, issued September 1, 1999, allowed American Chemet to replace the baghouse that vented to stack #19 with a new larger capacity baghouse. The new larger capacity baghouse then vented to the new #32 stack and controlled the emissions from the existing #30 copper mill and #32 crusher. The #31 sieve was moved to work in association with the #24 copper mill, and be controlled by the baghouse venting to stack #18. Previously, Permit #1993-07 allowed American Chemet to replace the #32 crusher; however, American Chemet elected to not construct the #45 crusher and kept the #32 crusher in active service. Permit #1993-08 allowed the facility to control the emissions from the #32 crusher with the new baghouse.

American Chemet also installed three new process units, all controlled by a new baghouse venting to the #32 stack. The new process units were denoted as the #46 copper mill, the #47 screen, and the #48 copper mill. Thus, the new baghouse controlled five process units: the three new units described above and two existing units.

Also, American Chemet requested an extension of time to construct a 20-meter stack that would exhaust emissions from the #1 and #41 copper furnaces. The new stack was approved in a previous permit (#1995-05) and a Board order issued on June 30, 1995. Permit #1993-08 granted American Chemet an extension to construct the taller stack. Under Permit #1993-08, the new stack had to be constructed no later than August 31, 2002.

American Chemet is located in a non-attainment area for the national ambient air quality standard for lead. Permit #1993-08 did not increase lead emissions, and the process equipment within the facility that might possibly contribute to ambient lead concentrations was not affected by the alterations. A small increase in particulate emissions from the facility was anticipated as a result of emissions from the new stack (#32); however, modeling was not required due to the diminutive nature of the emissions increase. The permitted alterations would not adversely impact the SIP for lead in East Helena.

Permit #1993-09 was issued September 22, 2000, for an alteration of Permit #1993-08. American Chemet proposed to install and operate a new gas processor (#49 gas processor) to supply process gas to an existing copper furnace (#16 copper furnace). The #49 gas processor would have enough capacity to supply process gas for two additional copper furnaces. The permitting action allowed American Chemet to operate two additional copper furnaces in conjunction with the #49 gas processor, in the future. The two additional copper furnaces would be the #17 copper furnace and the #18 copper furnace or the #28 copper furnace. The #49 gas processor would replace the #39 gas processor that would be removed from service.

The site where American Chemet is located is currently non-attainment for the national ambient air quality standard for lead. The permit did not allow an increase in allowable lead emissions, and the process equipment within the facility that could possibly contribute to ambient lead concentrations was not affected by the alterations proposed. A small increase in CO emissions from the facility was anticipated as a result of emissions from the new #49 gas processor. However, modeling was not required because of the small increase in emissions. The alterations

would not adversely impact the SIP for lead in East Helena. Permit #1993-09 replaced Permit #1993-08.

Permit #1993-10 was issued January 20, 2001, for a modification of Permit #1993-09. On September 27, 2000, the Department received American Chemet's initial request to change conditions in Permit #1993-09.

American Chemet requested removal of the condition in Section II.A.22.b that required the operation of a nitrogen gas purge at the discharge end of any copper furnace receiving process gas from the #49 gas processor.

The company also requested deletion of the notification requirements contained in Sections II.D.1, II.D.2, II.D.4, and II.D.5 of Permit #1993-09.

Additionally, American Chemet requested permission to control CO emissions from the three copper furnace - #49 gas processor combinations with individual afterburners, instead of just one afterburner. The Department agreed to this approach and apportioned the original CO limit between the three afterburners. All three afterburners were required to be source tested.

Finally, the company requested a de minimis determination on their proposal to vent the #44 copper mill's baghouse directly to atmosphere, instead of venting it to the inlet of the baghouse associated with stack #25. The Department agreed to the change, but added the same limits to the #44 copper mill, as applied to the baghouse associated with stack #25.

The American Chemet site is located in a lead non-attainment area. The permitting action did not increase lead emissions. A minor increase in CO emissions (0.21 tpy) from the facility was anticipated as a result of the emissions from the two additional incinerators associated with the new #49 gas processor. Modeling was not required because of the minimal increase in emissions. Permit #1993-10 replaced Permit #1993-09.

Permit #1993-11 was issued on October 12, 2001, to allow for a modification of Permit #1993-10. The modification reflected changes to the #5 Copper (Cu) Mill and related conditions in Permit #1993-10. Further analysis of the permit application and historical records concluded that the proposed changes would be de minimis and that a permit alteration was not required. Additionally, the Department had previously issued de minimis determinations on other equipment changes. All of these changes were incorporated in this permit modification and are discussed below:

- In a letter dated January 24, 2001, American Chemet requested a de minimis determination on the replacement of the baghouse on the #1 Cu Furnace. The new baghouse is identical to the baghouse on the #41 Cu Furnace. The baghouse proposed for the #1 Cu Furnace differs from the original one with minor changes in operating parameters. Because American Chemet is located in a lead non-attainment area and because the #1 Cu furnace is a minor source of lead emissions, the Department modeled the new baghouse parameters and concluded that the proposed changes complied with the East Helena lead SIP. Therefore, in a letter dated March 22, 2001, the Department agreed that the proposed change was de minimis in nature.

- In a letter dated March 12, 2001, American Chemet requested a de minimis determination on ancillary equipment upgrades to the baghouse on the #41 Cu Furnace. American Chemet proposed to replace the blower fan and motor in order to increase the airflow rate through the baghouse from 5,800 to 6,600 ACFM. Additionally, American Chemet proposed to upgrade the #1 Cu Furnace baghouse so that it would have operating parameters identical to the

baghouse on the #41 Cu Furnace. Because American Chemet is located in a lead non-attainment area and because the #1 and #41 Cu Furnaces are minor sources of lead emissions, the Department modeled the new parameters on both baghouses and concluded that the proposed changes complied with the East Helena lead SIP. Therefore, in a letter dated March 22, 2001, the Department agreed that the proposed changes were de minimis in nature.

- In an application received on August 2, 2001, American Chemet requested an alteration of Permit #1993-10 to replace a fan and the particle classification system on their #5 Cu Mill to increase the process rate of the #5 Cu Mill. The Department's review concluded that the proposed changes would not increase the "potential to emit" since the emissions from the three, product-recovery baghouses and the product-recovery cyclone associated with the #5 Cu Mill would not increase. Therefore, the proposed changes were determined to be de minimis in nature. However, the review of historical Department records for earlier permits on the #5 Cu Mill revealed that conditions from an earlier permit had not been carried forward. As a result of a previous Best Available Control Technology (BACT) analysis, conditions had been placed on a #5 Cu Mill baghouse in Permit #1589 by the Department's predecessor, the Department of Health & Environmental Sciences. These conditions were inadvertently left out of Permit #1993-01 when it was issued to consolidate all of American Chemet's earlier permits. Therefore, the Department restored those conditions as part of this permit action.

- As part of this permit modification, the Department clarified the names for two copper mills and their associated product recovery units and updating the equipment list. The product recovery baghouses associated with the two copper mills have in the past been referred to individually as "copper mills." These names potentially led readers into thinking that there were six copper mills, instead of only two copper mills and six product recovery baghouses. This permit action also clarified the limitations and conditions on the two copper mills and their associated baghouses. Additionally, the inventory of potential emissions was updated. Permit #1993-11 replaced Permit #1993-10.

On July 11, 2002, American Chemet was issued **Permit #1993-12**. This modification included the installation and operation of a pilot plant to test a new production operation. American Chemet proposed to use an existing baghouse to control the particulate emissions from the pilot plant. Based on the emission limits for the existing baghouse, the potential emissions from the pilot plant are less than 15 tons per year. Therefore, the proposed change was accomplished through the de minimis rule.

The modification also addressed a previously issued de minimis determination on another equipment change. In a letter dated January 11, 2002, American Chemet requested a de minimis determination on the upgrade of the #14 Copper Sizer. The new Copper Sizer (Copper Sizer #50) incorporates the process baghouse which controlled the #14 Copper Sizer into its closed-loop system design. In a letter dated January 16, 2002, the Department agreed that the proposed change was de minimis in nature.

Additionally, the permit action reflected a request by American Chemet to delete the notification requirements in Section II.D.2, II.D.3, and II.D.5 of Permit #1993-11, which have been met, and change the name of stack 14 to stack 14, 14A, 14B, and 14C. Permit #1993-12 replaced Permit #1993-11.

On August 20, 2002, the Department received American Chemet's request for a modification of Permit #1993-12 for the addition of a federally enforceable condition (Section II.A.25 of Permit #1993-13) to allow for a de minimis friendly permit. The condition requires American Chemet to utilize, on new equipment installed after August 21, 2002, conveyor covers or enclosures, transfer

point covers or enclosures and structural enclosures surrounding process equipment unless otherwise specified in the permit. **Permit #1993-13** replaced Permit #1993-12.

D. Current Permit Action

The current permit action is a modification of Permit #1993-13. On September 26, 2003, American Chemet requested an extension to permit condition Section II.A.6. The condition was originally added to the Montana air quality permit to assist with any potential emission problems, which could have affected the East Helena Lead SIP. American Chemet has no current plans to construct the 20-meter stack. However, the facility would like to keep the option available for future use.

On September 8, 2003, the Department received a request from American Chemet to upgrade the pilot plant, permitted in Montana Air Quality Permit #1993-12 to a full scale operation. The pilot plant was installed as a test unit of a new technology for producing copper oxide. The proposed unit, referred to as the #56 Copper Furnace, will use the baghouse, which controls the #24 Copper Mill (Stack 18) for product recovery in the same manner as the pilot plant. The #56 Copper furnace feed system will be controlled by the baghouse at the #15 Copper Sizer (Stack 13). Based on the information submitted by American Chemet, the Department determined the upgrade falls within the de minimis rule, ARM 17.8.745, because the potential emissions are well below 15 tons per year, and the modification will not violate any conditions of the existing permit.

In addition, on September 13, 2002, the Department received American Chemet's proposed facility modifications for the purpose of enabling an increase in production and improving material handling efficiency. The project will affect the facility's sizing, mixing and packaging processes. The new equipment will include, a copper furnace and associated baghouse, a new conveying system and associated feed bins, 3 copper mixers and associated bins, bin vents and boiler, and a packer with associated baghouse, bins, and bin vents. The Department determined that the modifications meet the criteria set forth in ARM 17.8.745 because the proposed increase in emissions for the facility will be less than 15 tons per year.

American Chemet also proposed to remove the #11 copper mill vent baghouse and the #11 copper mill feed baghouse. Some of the equipment currently controlled by those baghouses will also be removed or shut down. The remaining equipment will be controlled by the #11 Copper Mill Support Baghouse. The #21 copper furnace will also be removed from the permit. American Chemet also requested that the outlet grain loading limitation for several emitting units be reduced. The grain loading limitation will be lowered for the emissions from the following equipment: Stack #14 (controlling emissions from the #24 Copper Mill, the #28 Copper Furnace), Stack #25 (controlling emissions from the #33 Copper Blender, the #34 Copper Mill, the #35 Copper Sieve, the #36 Copper Blender, and the #37 Copper Packer).

Furthermore, American Chemet requested the following equipment and associated baghouses be restricted to an operating limit of 7,000 hours per rolling 12-month period: #33 Copper Blender, the #34 Copper Mill, the #35 Copper Sieve, the #36 Copper Blender, the #37 Copper packer, the #44 Copper Mill, the #16, #17, and #18 Copper Furnaces, the #38 Copper Mill, and the #42 Copper Sizer.

American Chemet plans to upgrade the pollution control equipment for the #2 Copper Furnace and the #19 Copper Furnace by installing a new baghouse dust collector that will serve both units. Currently, the #2 Copper Furnace emissions are controlled by a wet scrubber. Emissions

from the #19 Copper Furnace are currently controlled by a thermal oxidation unit. **Permit #1993-14** will replace Permit #1993-13.

E. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial quotations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

2. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   American Chemet shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

3. ARM 17.8.110 Malfunctions. The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

4. ARM 17.8.111 Circumvention. No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.222 Ambient Air Quality Standard for Lead
5. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

American Chemet must demonstrate compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate. (2) Under this rule, American Chemet shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Processes. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Further, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes. This rule applies to the #19 copper furnace. For the afterburners permitted under #1993-10 these requirements are superceded by the requirements in MCA 75-2-215.

6. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The owner and operator of any stationary source or modification, as defined and applied in 40 CFR Part 60, shall comply with the NSPS. The American Chemet facility is not an NSPS affected source because it does not meet any of the definitions in 40 CFR Part 60; therefore, this rule does not apply to this facility.

D. ARM 17.8, Subchapter 4, Stack Height and Dispersion Techniques, including, but not limited to:

1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.402 Requirements. American Chemet must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or altered stack for American Chemet is below the allowable 65-meter GEP stack height.

E. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality

permit application. A permit application is incomplete until the proper application fee is paid to the Department. The current permitting action is administrative; therefore, a permit application and fee were not required.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which pro-rate the required fee amount.

F. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits – When Required. This rule requires a person to obtain an air quality permit to construct, alter, or use an air contaminant source, which has the Potential to Emit (PTE) more than 25 tons per year of any pollutant. American Chemet has the potential to emit more than 25 tons per year of PM, PM_{10}, and CO; therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits – General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit Program.

4. ARM 17.8.745 When Permit Required—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. American Chemet was not required to submit an application for the current permit action because it is a de minimis modification under ARM 17.8.745. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. American Chemet was not required to submit a public notice for the current permit action because it is a de minimis modification under ARM 17.8.745 .

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. American Chemet is required to install on the new or altered source the maximum air pollution control capability, which is technically

practicable and economically feasible, except that BACT shall be utilized. A discussion of the BACT Analysis is contained in Section III of this analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving American Chemet of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment of Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase in emissions because of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.734 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

15. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, MCA.

G. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this sub-chapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

American Chemet is not a major stationary source since this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions). Therefore, a New Source Review (NSR) analysis is not required.

H. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. PTE > 100 tons/year of any pollutant.

   b. PTE > 10 tons/year of any one Hazardous Air Pollutant (HAP), or PTE > 25 tons/year of a combination of all HAP's, or lesser quantity as the Department may establish by rule.

   c. PTE > 70 tons/year of PM_{10} in a serious PM_{10} non-attainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #1993-14 for American Chemet, the following conclusions were made:

   a. The facility's PTE is less than 100 tons/year for any pollutant.

   b. The facility's PTE is less than 10 tons/year for any single HAP and less than 25 tons/year for all HAPs.

   c. This source is not located in a serious PM_{10} non-attainment area.

   d. This facility is not subject to any current NSPS.

   e. This facility is not subject to any current NESHAP standards.

   f. This source is not a Title IV affected source, nor a solid waste combustion unit.

   g. This source is not an EPA designated Title V source.

   Based on the above conclusions, a Title V operating permit is not required.

I. MCA 75-2-215, Solid or Hazardous Waste Incineration - additional permit requirements:

1. MCA 75-2-215 requires air quality permits for all new commercial solid waste incinerators. In a previous permitting action, American Chemet complied with this requirement. In accordance with MCA 75-2-211(9)(b), the current permit action does not require the preparation of an environmental impact statement, and therefore is not subject to the provisions of MCA 75-2-215.

2. MCA 75-2-215 requires the applicant to provide, to the Department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including HAPs from the incineration of solid or hazardous waste. The Department determined that the information submitted in a previous permit application fulfilled this requirement. The current permit action does not require the preparation of an environmental impact statement, and therefore is not subject to the provisions of MCA 75-2-215.

3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety, and welfare. The Department previously determined negligible risk through a health risk assessment. The current permit action does not require the preparation of an environmental impact statement, and therefore is not subject to the provisions of MCA 75-2-215.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. The current permit action does not require BACT because the Department determined that the modifications meet the criteria set forth in ARM 17.8.745 because the proposed increase in emissions for the facility will be less than 15 tons per year. Furthermore, the current permit action does not require the preparation of an environmental impact statement, and therefore is not subject to the provisions of MCA 75-2-215.

III. BACT Determination

A BACT determination is required for each new or altered source. American Chemet shall install on the new or altered source the maximum air pollution control capability, which is technically practicable and economically feasible, except that best available control technology shall be utilized. A BACT analysis was not required for the current permit action because the Department determined that the modifications meet the criteria set forth in ARM 17.8 745 because the proposed increase in emissions for the facility will be less than 15 tons per year.

IV. Emission Inventory

A. Pre-modification Emissions

Table IV.A – Summary of Potential Air Emissions – All Sources (tpy)

Table	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
IV.C	11.37	11.37	0.004	0.72	0.04	0.14	
IV.D	24.18	24.18	0.013	2.52	0.13	0.50	0.0005
IV.E	1.54	1.54	0.001	0.11	0.01	0.02	
IV.F	4.08	4.08					
IV.G	6.40	6.40					
IV.H	0.11	0.11	0.01	1.24	0.07	27.36	
IV.I	10.44	10.44					
IV.J	2.37	2.37					
IV.L	7.08	7.08					
Totals	67.57	67.57	0.028	4.59	0.25	28.02	0.0005

Note: Table IV.A reflects total potential emissions prior to modifications made in Permit 1993-14.

B. Post-Modification Emissions

Table IV.B - Summary of Potential Air Emissions – All Sources (tpy)

Table	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
IV.C	4.90	4.90	0.004	0.72	0.04	0.14	
IV.D	5.33	5.33	0.013	2.52	0.13	0.50	0.0010
IV.E	1.54	1.54	0.001	0.11	0.01	0.02	
IV.F	2.43	2.43					

IV.G	0.061	0.061					
IV.H	0.11	0.11	0.01	1.24	0.07	27.36	
IV.I	10.44	10.44					
IV.J.	2.37	2.37					0.0005
IV.K.	3.63	3.63	0.04	4.60	0.25	3.86	0.01
IV.L.	7.08	7.08					
Totals	37.89	37.89	0.068	9.19	0.50	31.88	0.011

Note: Table IV.B reflects total potential emissions post-modifications made in Permit #1993-14.

C. Potential emission estimates for the #33 Copper Blender, #38 Copper Mill, #40 Copper Sizer, and the #3 & #4 Copper Furnaces.

Table IV.C. - Air Pollutants (ton/year)						
Source	PM	PM_{10}	SO_2	NO_x	VOC	CO
#33 Cu Blender	.986	.986				
#38 Cu Mill	1.19	1.19				
#40 Cu Sizer	.429	.429				
#3&4 Cu Furnaces[2]	2.297	2.297	0.003	0.535	0.028	0.107
Totals	4.90	4.90	0.004	0.72	0.04	0.14

#33 Cu Blender, #34 Cu Mill, #35 Cu Sieve, #36 Cu Blender, and #37 Cu Packer

Air Flow = 4000 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions{Assume PM_{10} = PM due to baghouse control}
4000 acfm * (26.0 "Hg / 29.92 "Hg) * ((460 + 68°F) / (460 + 87°F)) = 3,355.20 scfm
3,355.20 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * (0.010 gr/dscf) = 0.282 lb/hr
0.282 lb/hr * 7000 hr/yr * 1 ton / 2000 lb = .986 ton/year

#38 Copper Mill

Air Flow = 5051 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions{Assume PM_{10} = PM due to baghouse control}
5051 acfm * (26.0 "Hg / 29.92 "Hg) * ((460 + 68°F) / (460 + 87°F)) = 4,236.778 scfm
4,236.778 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * (0.010 gr/dscf) = 0.356 lb/hr
0.356 lb/hr * 8760 hr/yr * 1 ton / 2000 lb = 1.25 ton/year

#40 Copper Sizer

Air Flow = 2600 acfm
Total Particulate Matter Grain Loading = 0.020 gr/dscf

PM/PM_{10} Emissions{Assume PM_{10} = PM due to baghouse control}
2600 acfm * (26.0 "Hg / 29.92 "Hg) * ((460+68°F) / (460+87°F)) = 2,180.80 scfm
2,180.80 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.020 gr/dscf = 0.366 lb/hr
0.366 lb/hr * 8760 hr/yr * 1 ton / 2000 lb = 1.60 ton/year

#3 and #4 Copper Furnaces

Maximum natural gas usage = 10.70 MMcf/year
Air Flow = 5500 acfm
Total Particulate Matter Grain Loading = 0.020 gr/dscf

PM/PM_{10} Emissions{Assume PM_{10} = PM due to baghouse control}
5500 acfm * (26.0 "Hg / 29.92 "Hg) * ((460+68°F) / (460+350°F)) = 3121.01 scfm
3121.01 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.020 gr/dscf = 0.524 lb/hr

[2] The actual emissions from the #3 and #4 copper furnaces previously vented through the #2 copper furnace scrubber. Therefore, the total emissions increase is over estimated in this table.

0.524 lb/hr * 8760 hr/yr * 1 ton / 2000 lb = 2.297 ton/year

SO_2 Emissions
EF = 0.60 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 0.60 lb/MMcf * 1 ton/2000 lb = 0.003 ton/yr

NO_x Emissions
EF = 100.00 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 100.00 lb/MMcf * 1 ton/2000 lb = 0.535 ton/yr

VOC Emissions
EF = 5.30 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 5.30 lb/MMcf * 1 ton/2000 lb = 0.028 ton/yr

CO Emissions
EF = 20.00 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 20.00 lb/MMcf * 1 ton/2000 lb = 0.107 ton/yr

D. Potential emissions estimates for the #41 copper furnace and #19 copper furnace.

Table IV.D. - Air Pollutants (ton/year)							
Source	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
#41 Cu Furnace	2.00	2.00	0.01	1.95	0.10	0.39	0.0005
#19 Cu Furnace	21.02	21.02	0.003	0.57	0.03	0.11	
#19 and #2 Cu Furnaces (post-combination)	3.33	3.33	0.003	0.57	0.03	0.11	0.0005
Totals (#41 and #19)	23.39	23.39	0.013	2.52	0.13	0.50	0.0005
Totals (#41, #19, and #2)	5.33	5.33	0.013	2.52	0.13	0.50	0.0010

#41 Copper Furnace
Fuel Usage = 39 MMcf/yr
Particulate Matter grain loading = 0.015 gr/dscf {permit condition}
Baghouse air flow rate = 6,600 acfm {American Chemet}
6600 acfm * (26.0 "Hg/29.92 "Hg) * ((460 + 68)°R/(460 + 224)°R) * (1 - (5% H_2O)/100%)) = 3557.96 dscfm

PM/PM_{10} Emissions {assume PM_{10} = PM due to baghouse control}
3557.96 dscfm * (60min/hr) * (1 lb/7000 grains) * (0.015 grains/dscf) = 0.457 lb/hr
0.457 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 2.00 ton/year

SO_2 Emissions
EF = 0.6 lb/MMcf {AFSEF SCC 39000689}
39 MMcf/yr * 0.60 lb/MMcf * 1 ton/2000 lb = 0.01 ton/yr

NO_x Emissions
EF = 100 lb/MMcf {AFSEF SCC 39000689}
39 MMcf/yr * 100.00 lb/MMcf * 1 ton/2000 lb = 1.95 ton/yr

VOC Emissions
EF = 5.3 lb/MMcf {AFSEF SCC 39000689}
39 MMcf/yr * 5.30 lb/MMcf * 1 ton/2000 lb = 0.10 ton/yr

CO Emissions
EF = 20 lb/MMcf {AFSEF SCC 39000689}
39 MMcf/yr * 20.00 lb/MMcf * 1 ton/2000 lb = 0.39 ton/yr

Pb Emissions
EF = 15.4 lb/calendar quarter {8/4/95 Board Order & 6/30/95 Stipulation}
15.4 lb/quarter * 4 quarters/year * 1 ton/ 2000 lb = 0.0005 ton/yr

#19 Copper Furnace – (pre-modification)
Process Rate = 5,600 cfm {American Chemet Information}
Fuel Usage = 11.4 MMcf/yr

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
EF = 0.10 gr/dscf {1990 Stack test on #1 Cu Furnace}
5,600 cfm * 0.10 gr/dscf * 1 lb/7000 gr * 60 min/hr * 8760 hr/yr * 1 ton/2000 lb = 21.02 ton/yr

SO_2 Emissions
EF = 0.60 lb/MMcf {AFSEF SCC 39000689}
11.4 MMcf/yr * 0.60 lb/MMcf * 1 ton/2000 lb = 0.003 ton/yr

NO_x Emissions
EF = 100 lb/MMcf {AFSEF SCC 39000689}
11.4 MMcf/yr * 100.00 lb/MMcf * 1 ton/lb = 0.57 ton/yr

VOC Emissions
EF = 5.30 lb/MMcf {AFSEF SCC 39000689}
11.4 MMcf/yr * 5.30 lb/MMcf * 1 ton/lb = 0.03 ton/yr
CO Emissions
EF = 20.0 lb/MMcf {AFSEF SCC 39000689}
11.4 MMcf/yr * 20.0 lb/MMcf * 1 ton/lb = 0.114 ton/yr

#19 and #2 Copper Furnaces – (post modification)
Maximum natural gas usage = 11.4 MMcf/year
Air Flow = 8,000 acfm {American Chemet Information}
Total Particulate Matter Grain Loading = 0.020 gr/dscf

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
8,000 acfm * (26.0 "Hg / 29.92 "Hg) * ((460+68°F) / (460+350°F)) = 4531.59 scfm
4531.59 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.020 gr/dscf = 0.761 lb/hr
0.761 lb/hr * 8760 hr/yr * 1 ton / 2000 lb = 3.33 ton/year

SO_2 Emissions
EF = 0.60 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 0.60 lb/MMcf * 1 ton/2000 lb = 0.003 ton/yr

NO_x Emissions
EF = 100.00 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 100.00 lb/MMcf * 1 ton/2000 lb = 0.535 ton/yr

VOC Emissions
EF = 5.30 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 5.30 lb/MMcf * 1 ton/2000 lb = 0.028 ton/yr

CO Emissions

EF = 20.00 lb/MMcf of Natural Gas Burned {ASFEF, SCC 39000689}
11 MMcf/yr * 20.00 lb/MMcf * 1 ton/2000 lb = 0.107 ton/yr

E. Potential emissions estimates for the #42 Copper Sizer and the #43 Copper Blender.

Table IV.E. - Air Pollutants (ton/year)							
Source	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
#42 Cu Sizer	0.80	0.80					
#43 Cu Blender	0.74	0.74	0.001	0.110	0.006	0.022	
Totals	1.54	1.54	0.001	0.110	0.006	0.022	

#42 Copper Sizer
Air Flow = 2600 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
2600 acfm * (26.0 "Hg/29.92 "Hg) * ((460+68°F) / (460+87°F)) = 2,180.880 scfm
2,180.880 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.010 gr/dscf = 0.183lb/hr
0.183 lb/hr * 7000 hr/yr * 1 ton/2000 lb = 0.641 ton/year

#43 Copper Blender
Air Flow = 2,700 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
2700 acfm * (26.0 "Hg/29.92 'Hg) * ((460 + 68°F) / (460 + 160°F)) = 1,998.102 scfm
1,998.102 scfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.010 gr/dscf = 0.168 lb/hr
0.168 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 0.74 ton/year

#43 Copper Blender-Gas
Maximum Process Rate = 250 CFH of natural gas {based on 250,000 BTU/hr info. from company}
Maximum Natural Gas Usage = 2.19 MMcf/yr

SO_2 Emissions
EF = 0.60 lb/MMcf of natural gas burned {ASFEF, SCC 39000689}
2.19 MMcf/yr * 0.60 lb/MMcf * 1 ton/2000 lb = 0.001 ton/yr

NO_x Emissions
EF = 100.00 lb/MMcf of natural gas burned {ASFEF, SCC 39000689}
2.19 MMcf/yr * 100.00 lb/MMcf * 1 ton/2000 lb = 0.110 ton/yr

VOC Emissions
EF = 5.30 lb/MMcf of natural gas burned {ASFEF, SCC 39000689}
2.19 MMcf/yr * 5.30 lb/MMcf * 1 ton/2000 lb = 0.006 ton/yr

CO Emissions
EF = 20.0 lb/MMcf of natural gas burned {ASFEF, SCC 39000689}
2.19 MMcf/yr * 20.0 lb/MMcf * 1 ton/2000 lb = 0.022 ton/yr

F. Potential particulate emissions for the #34 Copper Mill and the #44 Copper Mill.

Acf/min * (26.0 "Hg / 29.92 "Hg) * ((460 + 68)°R / (460 + 70)°R) * (1 - (2% H_2O) / 100%)) = dscf/min
Dscf/min * (60min/hr) * (1 lb/7000 grains) * (grains/dscf) = lb/hr

lb/hr * 8760 hr/yr * 1 ton/2000 lb = ton/year
Assume PM_{10} emissions equal PM emissions due to baghouse control.

Table IV.F. - Air Pollutants (ton/year)							
Emitting Unit	Stack Number	Emission Limit (gr/dscf)	Stack Flow (acfm)	Allowed Emissions (lb/hour)	Allowed Emissions (ton/yr)	Previous Actual (ton/yr)	New Actual Emissions (ton/yr)
#6 Copper Mill #45 Crusher	5	0.02	1,200	0.1745	0.7644	0.0935	0.0943
#36 Cu Blender #35 Cu Sieve #34 Cu Mill #33 Cu Blender #37 Cu Packer	25	0.01	4,000	0.2908	1.274	0.0005	0.0009
#44 Cu Mill	21	0.01	1,200	0.0890	0.3900	NA	NA
Totals				0.5543	2.4284	NA	NA

G. Potential particulate emissions for the #30 copper mill, #32 crusher, the #46 copper mill, the #47 screen, and the #48 copper mill.

Table IV.G. - Air Pollutants (ton/year)					
Emitting Units	Stack #	Emission Limit (grains/dscf)	Stack Flow Rate (acfm)	Emission Rate (pound/hour)	Emission Rate (ton/year)
#30 Cu Mill, #32 Crusher, #46 Cu Mill (new) #47 Screen (new), #48 Cu Mill (new)	32	0.015	8300	0.0139	0.0607

Note: the baghouse that vented to stack #19 was removed from service.

8300acfm * (26.0 Hg/29.92 Hg) * ((460 + 68)°R/(460+70)°R) * (1.5%H_2O/100%) = 107.78dscf/min
107.78dscf/min * (60min/hr) * (1 lb/7000 grains) * 0.015grains/dscf = .0139lb/hr
.0139lb/hr * 8760 hrs/yr * (1 ton/2000 lb) =0.0607 tons/year
Assume PM_{10} equals PM due to baghouse control.

H. Potential emissions from the #49 Gas Processor and the #16 Copper Furnace, the #17 Copper Furnace, and the #18 or #28 Copper Furnace.

Table IV.H. - Air pollutants (ton/year)					
Source	CO	NO_x	PM/PM_{10}	SO_2	VOC
Process gas	26.16	-	-	-	-
#49 Heating	0.95	1.13	0.09	0.01	0.06
Afterburner	0.25	0.11	0.02	0.00	0.01
Totals	27.36	1.24	0.11	0.01	0.07

CO emissions from utilization of process gas from #49 Gas Processor
9,000 scf/hr of process gas from #49 Gas Processor at maximum design {American Chemet}
1,800 scf/hr of CO = 20% of 9,000 scf/hr process gas {American Chemet}
0.078035 lb/scf = density of CO at 0°C & 760 mm Hg
7.0 lb/hr = amount of CO converted in each copper furnace {American Chemet}
95.0% = oxidation rate of CO to CO_2 in afterburner {Johnson Gas Appliance Co.}
(1,800 scf/hr * 0.078035 lb/scf) – (3 furnaces * 7 lb/hr/furnace) = 119.46 lb/hr CO
119.46 lb/hr * (1- 0.95) = 5.97 lb/hr CO net emission rate
5.97 lb/hr * 8,760 hr/yr * 1 ton/2,000 lb = 26.16 ton/year of CO

Emissions from combustion of natural gas in #49 Gas Processor
Natural gas combustion max. rate = 2,580 cf/hr = 22.6 MMcf/yr {American Chemet}

NO_x emissions
22.6 MMcf/yr * 100 lb/MMcf * 1 ton/2,000 lb = 1.13 ton/yr {AP42, Table 1.4-1, 7/98}

CO emissions
22.6 MMcf/yr * 84 lb/MMcf * 1 ton/2,000 lb =0.95 ton/yr {AP42, Table 1.4-1, 7/98}

PM/PM_{10} emissions
22.6 MMcf/yr * 7.6 lb/MMcf * 1 ton/2,000 lb = 0.09 ton/yr {AP42, Table 1.4-2, 7/98}

SO_2 Emissions
22.6 MMcf/yr * 0.6 lb/MMcf * 1 ton/2,000 lb = 0.01 ton/yr {AP42, Table 1.4-2, 7/98}

VOC emissions
22.6 MMcf/yr * 5.5 lb/MMcf * 1 ton/2,000 lb = 0.06 ton/yr {AP42, Table 1.4-2, 7/98}

Emissions from combustion of natural gas in Afterburners
Natural gas combustion max. rate = 200 cf/hr = 1.75 MMcf/yr {American Chemet}
2.75 MMcf/yr * 3 afterburners = 5.25 MMcf/yr

NO_x emissions
5.25 MMcf/yr * 94 lb/MMcf * 1 ton/2,000 lb = 0.25 ton/yr {AP42, Table 1.4-1, 7/98}

CO emissions
5.25 MMcf/yr * 40 lb/MMcf * 1 ton/2,000 lb =0.11 ton/yr {AP42, Table 1.4-1, 7/98}

PM/PM_{10} emissions
5.25 MMcf/yr * 7.6 lb/MMcf * 1 ton/2,000 lb = 0.02 ton/yr {AP42, Table 1.4-2, 7/98}
SO_2 Emissions
5.25 MMcf/yr * 0.6 lb/MMcf * 1 ton/2,000 lb = 0.00 ton/yr {AP42, Table 1.4-2, 7/98}

VOC emissions
5.25 MMcf/yr * 5.5 lb/MMcf * 1 ton/2,000 lb = 0.01 ton/yr {AP42, Table 1.4-2, 7/98}

I. Potential particulate emissions for the #5 Copper Mill and the #11 Copper Mill

acf/min * (26.0 "Hg / 29.92 "Hg) * ((460 + 68)°R / (460 + 70)°R) * (1 - (2% H_2O) / 100%)) = dscf/min
dscf/min * (60min/hr) * (1 lb/7000 grains) * (grains/dscf) = lb/hr
lb/hr * 8760 hr/yr * 1 ton/2000 lb = ton/year
Assume PM_{10} equals PM due to baghouse control.

Table IV.I. - Air pollutants (ton/year)

Emitting Unit	Stack #	Emission Rate (gr/dscf)	BH Flowrate (acfm)	PM/PM10 Emission Rate (lb/hr)	PM/PM10 Annual Emissions (ton/yr)
#5 Cu Mill Vent BH	4	0.02	2,800	0.41	1.79
#5 Cu Mill Transfer BH	5	0.02	4,500	0.66	2.88
#5 Cu Mill Feed BH	6	0.02	2,000	0.29	1.29
#5 Cu Mill Total	NA	NA	NA	NA	5.96
#11 Cu Mill Support BH	11	0.02	7,000	1.02	4.48
#5 & #11 Cu Mills Totals	NA	NA	NA	NA	10.44

J. Potential particulate emissions for the #1 Copper Furnace

Table IV.J. - Air Pollutants (ton/year)							
Source	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
#1 Cu Furnace	2.37	2.37					0.0005

Particulate Matter grain loading = 0.015 gr/dscf {permit condition}
Baghouse air flow rate = 6,600 acfm {American Chemet}
6600 acfm * (26.0 "Hg/29.92 "Hg) * ((460 + 68)°R/(460 + 224)°R) * (1 - (5% H_2O)/100%)) = 4,205.88 dscfm

PM/PM_{10} Emissions {assume PM_{10} equals PM due to baghouse control}
4,205.88 dscfm * (60min/hr) * (1 lb/7000 grains) * (0.015 grains/dscf) = 0.54 lb/hr
0.54 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 2.37 ton/year

Pb Emissions
EF = 15.4 lb/calendar quarter {8/4/95 Board Order & 6/30/95 Stipulation}
15.4 lb/quarter * 4 quarters/year * 1 ton/ 2000 lb = 0.0005 ton/yr

K. Potential emissions estimates for the #51 Copper Furnace, the #52 Copper Mixer Boiler, the #55 Packer and associated mixers, bins, conveyors and baghouses.

Table IV.K. – Air Pollutants (tons/year)							
Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**VOC**	**CO**	**Pb**
#51 Copper Furnace	2.35	2.35	0.03	4.38	0.24	3.68	0.01
#52 Copper Mixer Boiler	0.02	0.02	0.01	0.22	0.01	0.18	--
#55 Packer	<0.01	<0.01	--	--	--	--	--
Packaging Baghouse	1.28	1.28	--	--	--	--	--
Total	3.63	3.63	0.04	4.60	0.25	3.86	0.01

#51 Copper Furnace
Particulate Matter grain loading = 0.015 gr/dscf {permit condition}
Baghouse air flow rate = 6,600 acfm {American Chemet}
6600 acfm * (26.0 "Hg/29.92 "Hg) * ((460 + 68)°R/(460 + 224)°R) * (1 - (5% H_2O)/100%)) = 4,205.88 dscfm

PM/PM_{10} Emissions {assume PM_{10} equals PM due to baghouse control}
4,205.88 dscfm * (60min/hr) * (1 lb/7000 grains) * (0.015 grains/dscf) = 0.536 lb/hr
0.536 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 2.35 ton/year

NO_x emissions
0.01 MMcf/yr * 100 lb/MMcf * 1 ton/2,000 lb * 8760 hour/yr= 4.38 ton/yr {AP42, Table 1.4-1, 7/98}

CO emissions
22.6 MMcf/yr * 84 lb/MMcf * 1 ton/2,000 lb =0.95 ton/yr {AP42, Table 1.4-1, 7/98}

SO_2 Emissions
22.6 MMcf/yr * 0.6 lb/MMcf * 1 ton/2,000 lb = 0.01 ton/yr {AP42, Table 1.4-2, 7/98}

VOC emissions
22.6 MMcf/yr * 5.5 lb/MMcf * 1 ton/2,000 lb = 0.06 ton/yr

#52 Copper Mixer Boiler

Design Heat Input Capacity = 0.05 MMBtu/hr
Natural gas (NG) heating value = 1000 Btu/scf
Maximum hourly NG firing rate = 0.05MMBtu/hr * 1scf NG/1000 Btu = 0.0005 MMscf NG/hr

PM/PM_{10} Emissions
4.38 MMcf/yr * 7.6 lb/MMscf * 1 ton/2000 lb = 0.02 ton/yr

SO_2 Emissions
4.38 MMcf/yr * 0.6 lb/MMcf * 1 ton/2,000 lb = 0.01 ton/yr {AP42, Table 1.4-2, 7/98}

NO_x Emissions
4.38 MMcf/yr * 100 lb/MMcf * 1 ton/2,000 lb = .22 ton/yr {AP42, Table 1.4-1, 7/98}

VOC Emissions
4.38 MMcf/yr * 5.5 lb/MMcf * 1 ton/2000 lb = 0.01 ton/yr {AP42, Table 1.4-1, 7/98}

CO Emissions
4.38 MMcf/yr * 84 lb/MMcf * 1 ton/2000 lb = 0.18 ton/yr {AP42, Table 1.4-1, 7/98}

Pb Emissions
4.38 MMcf/yr * .0005 lb MMcf * 1 ton/2000 lb = 1.10×10^{-6} ton/yr {AP42-, Table 1.4-2, 7/98}

L. Potential emissions estimates for the #8 Copper Blender, the #9 Packer, the #15 copper Sizer, the #23 and #24 Copper Furnaces, and the #26 and #27 Packers.

Table IV.L. – Air Pollutants (tons/year)							
Source	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
#8 Cu Blender	1.97	1.97					
#9 Packer	0.64	0.64					
#15 Cu Sizer	1.43	1.43					
#23 Cu Furnace	0.26	0.26					
#24 Cu Furnace	1.27	1.27					
#26 & #27 Packers	1.51	1.51					
Total	7.08	7.08					

#15 Copper Sizer
Air Flow = 4500 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
4500 acfm * (26.0 "Hg/29.92 "Hg) * ((460+68°F) / (460+87°F)) = 3818 dscfm
3818 dscfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.010 gr/dscf = 0.3272 lb/hr
0.3272 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 1.43 ton/year

#8 Copper Blender
Air Flow =6200 acfm
Total Particulate Matter Grain Loading = 0.010 gr/dscf

PM/PM_{10} Emissions {Assume PM_{10} = PM due to baghouse control}
6200 acfm * (26.0 "Hg/29.92 'Hg) * ((460 + 68°F) / (460 + 160°F)) = 5260 dscfm
5260 dscfm * (1-(2% H_2O/100%)) * (60 min/hr) * (1lb/7000gr) * 0.010 gr/dscf = 0.4509 lb/hr
0.4509 lb/hr * 8760 hr/yr * 1 ton/2000 lb = 1.97 ton/year

V. Existing Air Quality

American Chemet's plant is located in an area designated as non-attainment for both lead and SO_2. SO_2 emissions from American Chemet are minimal compared to the standards and to the SO_2 emissions from ASARCO; therefore, American Chemet's SO_2 emissions are not included in the SO_2 SIP for the East Helena area.

The lead emissions from American Chemet, however, are included in the lead SIP. As part of the SIP process, American Chemet obtained state enforceable lead emission limitations for the plant. When the U.S. EPA adopts the lead SIP for East Helena, the limits will also be Federally enforceable. The limits contained in the lead SIP are the same as those contained in Sections II.A.5 and II.A.6 of Montana Air Quality Permit #1993-14. The changes resulting from this permitting action will not result in increased lead emissions being released to atmosphere.

VI. Air Quality Impacts

This permitting action would not increase emissions of criteria air pollutants from the facility; therefore, modeling was not required. The proposed permit change would not adversely impact the SIP for lead in East Helena.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

The current permitting action is administrative; therefore, an Environmental Assessment is not required by the Montana Environmental Policy Act.

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